

# Assessing Evidence-Based Medicine Competencies of Saudi Radiologic Technologists - A Narrative Review

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## **Abstract:**

**Evidence-based medicine (EBM) is a crucial component of modern healthcare, promoting the integration of current best research evidence with clinical expertise and patient preferences. Radiologic technologists play a vital role in diagnostic imaging and radiation therapy procedures, underscoring the importance of their competence in EBM principles and practices. This narrative review aims to synthesize the existing literature on the assessment of EBM competencies among radiologic technologists in Saudi Arabia. By examining the current state of EBM knowledge, attitudes, and skills within this professional group, this review seeks to identify gaps, challenges, and potential strategies to enhance EBM implementation in radiology practice.**

## **INTRODUCTION**

The concept of evidence-based medicine (EBM) has gained widespread recognition as a fundamental approach to healthcare delivery. EBM involves the conscientious integration of current best research evidence, clinical expertise, and patient preferences to inform medical decision-making (Sackett et al., 1996). By incorporating the latest scientific findings into clinical practice, EBM aims to improve patient outcomes, enhance the quality and safety of care, and promote cost-effectiveness (Dawes et al., 2005).

Radiologic technologists, also known as radiographers, play a critical role in diagnostic imaging and radiation therapy procedures, working closely with radiologists and other healthcare professionals (American Society of Radiologic Technologists [ASRT], 2022). Their responsibilities encompass a wide range of tasks, including operating imaging equipment, positioning patients, administering contrast media, and ensuring radiation safety (ASRT, 2022). Given the critical nature of their work and its direct impact on patient care, it is imperative that radiologic technologists possess competencies in EBM to ensure the delivery of high-quality, evidence-based care.

In Saudi Arabia, the healthcare system has undergone significant transformations in recent years, with a growing emphasis on the adoption of EBM principles and practices (Al-Omari et al., 2009; Alshehri et al., 2018). However, the assessment of EBM competencies among healthcare professionals, including radiologic technologists, remains an area that requires further exploration (Abd Almugeeth, 2014). This narrative review aims to synthesize the existing literature on the assessment of EBM competencies among radiologic technologists in Saudi Arabia, with a focus on identifying gaps, challenges, and potential strategies for improvement.

### **Knowledge and Awareness of Evidence-Based Medicine**

Several studies have explored the knowledge and awareness of EBM among radiologic technologists in Saudi Arabia, revealing varying levels of competency within this professional group. Al-Wahaibi et al. (2019) found that approximately 60% of the participants in their study had poor or fair knowledge of EBM concepts and principles, indicating a significant knowledge gap. Similarly, Al-Ghanem et al. (2018) reported that a substantial proportion of radiologic technologists (47.8%) had low EBM literacy levels, further highlighting the need for additional training and education in this area.

In contrast, Al-Saleh et al. (2020) reported relatively higher levels of EBM knowledge among radiologic technologists in Saudi Arabia, with approximately 65% of the participants demonstrating good or excellent EBM knowledge. This variation in findings suggests that EBM knowledge and awareness may differ across different regions, healthcare settings, or educational backgrounds within the Saudi radiologic technology profession.

### **Attitudes and Perceptions Towards Evidence-Based Medicine**

Several studies have explored the attitudes and perceptions of radiologic technologists in Saudi Arabia towards EBM. Al-Wahaibi et al. (2019) and Al-Ghanem et al. (2018) found that the majority of participants had positive attitudes towards EBM, recognizing its importance in improving patient care and clinical decision-making. However, these positive attitudes did not necessarily translate into adequate knowledge or implementation of EBM practices.

Al-Saleh et al. (2020) explored the relationship between EBM knowledge and attitudes, finding a positive correlation between higher EBM knowledge levels and more favorable attitudes towards EBM. This finding reinforces the importance of providing effective EBM education and training to not only enhance knowledge but also foster positive attitudes and promote the adoption of evidence-based practices among radiologic technologists.

### **Implementation of Evidence-Based Medicine in Practice**

While some studies have assessed knowledge and attitudes, fewer have directly examined the implementation of EBM in radiologic technology practice in Saudi Arabia. Al-Wahaibi et al. (2019) and Al-Ghanem et al. (2018) reported that only a small proportion of participants regularly implemented EBM principles in their clinical practice, citing barriers such as lack of time, limited access to resources, and inadequate training.

These findings highlight a concerning gap between the recognition of EBM's importance and its actual integration into daily clinical practice among radiologic technologists in Saudi Arabia. Bridging this gap is crucial to ensure that the potential benefits of EBM are fully realized in the delivery of diagnostic imaging and radiation therapy services, ultimately improving patient outcomes and the overall quality of care.

### **Challenges and Barriers to Evidence-Based Medicine Implementation**

Several challenges and barriers to EBM implementation among radiologic technologists in Saudi Arabia have been identified in the literature. These include:

1. Lack of sufficient training and education in EBM concepts and methods (Al-Wahaibi et al., 2019; Al-Ghanem et al., 2018). Many radiologic technology education programs may not adequately cover EBM principles, leaving practitioners with limited knowledge and skills in this area.
2. Limited access to research resources and databases (Al-Wahaibi et al., 2019; Al-Ghanem et al., 2018). Accessing relevant scientific literature and evidence-based guidelines can be challenging, particularly in smaller healthcare facilities or those with limited resources.
3. Time constraints and heavy workloads (Al-Wahaibi et al., 2019; Al-Ghanem et al., 2018). Radiologic technologists often face demanding schedules and high patient volumes, leaving little time for engaging in EBM activities such as literature searches, critical appraisal, and implementation of evidence-based practices.
4. Organizational and cultural factors, such as lack of institutional support and language barriers (Al-Ghanem et al., 2018; Al-Saleh et al., 2020). Fostering a culture that values and promotes evidence-

based practice requires organizational commitment and leadership support, which may be lacking in some healthcare settings. Additionally, language barriers can hinder access to and understanding of international research and guidelines.

Addressing these challenges is crucial to facilitate the successful integration of EBM principles into radiologic technology practice in Saudi Arabia. A multifaceted approach involving various stakeholders, including educators, healthcare administrators, and policymakers, is necessary to overcome these barriers and create an enabling environment for evidence-based practice.

### **Strategies for Enhancing Evidence-Based Medicine Competencies**

To address the identified challenges and enhance EBM competencies among radiologic technologists in Saudi Arabia, several strategies have been proposed in the literature:

1. Integrating EBM concepts and principles into radiologic technology education programs at both undergraduate and graduate levels (Al-Wahaibi et al., 2019; Al-Ghanem et al., 2018; Abd Almugeeth, 2014). This includes incorporating EBM-related courses, modules, and practical training to equip students with the necessary knowledge, skills, and attitudes for evidence-based practice.
2. Providing continuing professional development opportunities, such as workshops, seminars, and online courses, to enhance EBM knowledge and skills for practicing radiologic technologists (Al-Wahaibi et al., 2019; Al-Saleh et al., 2020). Ongoing educational initiatives are essential to ensure that practitioners remain up-to-date with the latest evidence and best practices.
3. Improving access to relevant research databases, evidence-based guidelines, and other EBM resources (Al-Wahaibi et al., 2019; Al-Ghanem et al., 2018). Healthcare institutions should invest in subscriptions to reputable databases and provide training on effective literature searching and retrieval.
4. Allocating dedicated time and support for EBM activities, such as literature searches, journal clubs, and case discussions (Al-Wahaibi et al., 2019; Al-Ghanem et al., 2018). This can be achieved through flexible scheduling, protected time for EBM activities, and the establishment of mentorship programs or collaborations with experienced EBM practitioners.
5. Fostering an organizational culture that values and promotes evidence-based practice, with leadership commitment and support (Al-Ghanem et al., 2018; Al-Saleh et al., 2020). Healthcare administrators and policymakers play a crucial role in creating an environment conducive to EBM adoption, including allocating necessary resources, providing incentives, and setting clear expectations and policies.
6. Encouraging interprofessional collaboration and knowledge-sharing between radiologic technologists, radiologists, and other healthcare professionals (Al-Wahaibi et al., 2019). Collaboration and open communication can facilitate the exchange of knowledge, best practices, and expertise, promoting a more holistic and coordinated approach to evidence-based patient care.
7. Incorporating technological solutions and innovative approaches to EBM education and implementation (Alghamdi & Alashban, 2023). The use of artificial intelligence (AI) and machine learning tools can assist in literature retrieval, evidence synthesis, and decision support, potentially reducing the time and effort required for EBM activities. Additionally, online platforms, mobile applications, and virtual training modules can enhance the accessibility and convenience of EBM education for radiologic technologists.

Implementing these strategies requires a concerted effort from various stakeholders, including educators, healthcare institutions, professional organizations, and policymakers. By addressing the identified barriers and promoting a culture of evidence-based practice, the radiologic technology profession in Saudi Arabia can contribute to the delivery of high-quality, patient-centered care and support the overall goals of the healthcare system.

### **CONCLUSION**

This narrative review has synthesized the existing literature on the assessment of EBM competencies among radiologic technologists in Saudi Arabia. The findings highlight varying levels of EBM knowledge, attitudes, and implementation among this professional group. While some studies reported positive attitudes and recognition of the importance of EBM, others revealed gaps in knowledge and limited integration of evidence-based practices.

Several challenges and barriers to EBM implementation were identified, including lack of training and education, limited access to resources, time constraints, organizational and cultural factors, and resistance to change. To address these challenges, a multifaceted approach is recommended, involving curriculum integration, continuing professional development, improved access to resources, dedicated time and support, organizational commitment, interprofessional collaboration, and the incorporation of technological solutions. By enhancing EBM competencies among radiologic technologists, the healthcare system in Saudi Arabia can promote the delivery of high-quality, evidence-based care in diagnostic imaging and radiation therapy services. This, in turn, can contribute to improved patient outcomes, increased efficiency, and cost-effectiveness in the healthcare system. Additionally, fostering a culture of evidence-based practice aligns with the broader goals of the Saudi healthcare system in providing patient-centered, high-quality care based on the latest scientific evidence.

Future research should focus on developing and evaluating targeted educational interventions and training programs to enhance EBM competencies among radiologic technologists in Saudi Arabia. Additionally, exploring the barriers and facilitators to EBM implementation from the perspectives of healthcare administrators, policymakers, and other stakeholders can provide valuable insights for developing supportive policies and strategies.

Furthermore, longitudinal studies assessing the long-term impact of EBM education and training on the knowledge, attitudes, and practices of radiologic technologists would be beneficial. Such studies could help evaluate the effectiveness of various interventions and inform the refinement of strategies to promote sustainable evidence-based practice within the profession.

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